

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions and listings of claims in the application:

Listing of Claims

1. (currently amended) A needle and hub assembly for an injection device, the assembly comprising:

a cap having an engaging portion adapted to engage an exterior surface of a cartridge, and a needle-supporting portion having a wall that includes an opening therein, the wall defining interior and exterior surfaces opposite each other;

a first hub portion having a forward section extending through the opening in the wall and defining a needle-receiving channel through the opening in the wall and having a section that extends along and contacts the interior surface of the wall;

a needle mounted in the needle-receiving channel and extending outwardly therefrom; and

a second hub portion mounted over the first hub portion and receiving at least a portion of the needle, the second hub portion having reinforcing structures which extend outwardly along and contact the exterior surface of the wall, the second hub portion further having a supporting portion that extends beyond the first hub portion in the direction of the needle and that contacts the needle;

wherein the wall of the needle-supporting portion of the cap is adjoined on the exterior surface by the second hub portion and on the interior surface directly opposite the adjoined exterior surface in the same direction as a longitudinal axis of the needle by the first hub portion forming a contiguous, mutually reinforcing sandwiched structure of the second hub portion, the wall, and the first hub portion that extends around the opening in the wall.

2. (original) The needle and hub assembly of claim 1, wherein the first and second hub portions are fused.

3. (original) The needle and hub assembly of claim 2, wherein the first and second hub portions are comprised of a plastic.

4. (original) The needle and hub assembly of claim 3, wherein the first and second hub portions are comprised of the same plastic.

5. (original) The needle and hub assembly of claim 2, wherein the cap is comprised of a metal.

6. (original) The needle and hub assembly of claim 5, wherein the cap is comprised of aluminum.

7. (previously presented) The needle and hub assembly of claim 1, wherein the reinforcing structures are radially-extending ribs.

8. (canceled)

9. (original) The needle and hub assembly of claim 1, wherein the needle-receiving channel provides a continuous flow pathway from the inside of the cap to the outside of the cap.

10. (currently amended) An automatic injector comprising:  
a housing;  
a cartridge disposed in the housing, the cartridge having at least one opening therein and containing a medicament, the medicament being rearwardly confined by a plunger;

an actuation assembly including a stored energy source that is capable of being released to drive the plunger through the cartridge;

a cap having an engaging portion adapted to engage an exterior surface of the cartridge to cover the opening in the cartridge, and a needle-supporting portion having a wall that includes an opening therein, the wall defining interior and exterior surfaces opposite each other;

a first hub portion having a forward section extending through the opening in the wall and defining a needle-receiving channel through the opening in the wall and having a section that extends along and contacts the interior surface of the wall;

a needle mounted in the needle-receiving channel and extending outwardly therefrom, the needle ~~being adapted~~ operative to expel the medicament when the plunger is driven through the cartridge; and

a second hub portion engaged with the first hub portion and receiving at least a portion of the needle, the second hub portion having reinforcing structures which extend outwardly along and contact the exterior surface of the wall directly opposite, and in the same direction as a longitudinal axis of the needle, the interior surface of the wall contacted by the first hub portion, the second hub portion further having a supporting portion that extends beyond the first hub portion in the direction of the needle and that contacts the needle;

wherein the reinforcing structures are radially-extending ribs, and the second hub portion, the wall, and the first hub portion form a contiguous, mutually reinforcing sandwiched structure that extends around the opening in the wall.

11. (original) The automatic injector of claim 10, wherein the first and second hub portions are fused.

12. (original) The automatic injector of claim 11, wherein the first and second hub portions are comprised of a plastic.

13. (original) The automatic injector of claim 12, wherein the first and second hub portions are comprised of the same plastic.

14. (original) The automatic injector of claim 10, wherein the cap is comprised of a metal.

15. (original) The automatic injector of claim 14, wherein the cap is comprised of aluminum.

16. (currently amended) The automatic injector of claim 10, wherein the ~~reinforcing structures adjoin the exterior surface of the wall of the needle supporting portion, and the first hub portion adjoins the interior surface of the wall directly opposite the adjoined exterior surface of the wall forming a contiguous, mutually reinforcing sandwiched structure of the reinforcing structures, the wall, and the first hub portion~~ defines a chamber into which the needle-receiving channel opens.

17. (canceled)

18. (original) The automatic injector of claim 10, wherein the needle-receiving channel provides a continuous flow pathway from the inside of the cap to the outside of the cap.

19. (original) The automatic injector of claim 10, wherein the cartridge has two medicament compartments.

20. (previously presented) The automatic injector of claim 19, wherein one of the medicament compartments is adapted to house a wet medicament component and the other medicament compartment is adapted to house a dry medicament component.

21. (original) The automatic injector of claim 20, wherein the at least one opening in the cartridge is in the dry medicament compartment.

22. (withdrawn) A method of forming a needle and hub assembly, comprising:
- forming a first hub portion;
  - providing a cap having an opening therein;
  - arranging the first hub portion such that the first hub portion has a portion thereof extending through the opening of the cap;
  - arranging a needle in a channel defined by the first hub portion; and
  - forming a second hub portion over an exterior surface of the cap such that the second hub portion engages the first hub portion and extends over at least a portion of the exterior surface of the cap.
23. (withdrawn) The method of claim 22, wherein forming the first hub portion comprises injection molding the first hub portion.
24. (withdrawn) The method of claim 22, wherein forming the second hub portion comprises injection molding the second hub portion.
25. (withdrawn) The method of claim 22, further comprising, after inserting the needle in the channel and before forming the second hub portion, moving the assembly to a second mold having cavities defining the second hub portion.
26. (withdrawn) The method of claim 22, wherein a portion of the first hub portion melts during the formation of the second hub portion such that a melt zone forms securing the first hub portion to the second hub portion.
27. (withdrawn) A method of assembling an automatic injector, comprising:
- filling a dry medicament compartment with a dry medicament component using an opening in the dry medicament compartment; and

sealing the opening in the dry medicament compartment by placing the needle and hub assembly of claim 22 over the opening.

28. (previously presented) The needle and hub assembly of claim 1 wherein the needle-receiving channel has a stop formed therein to limit the insertion depth of the needle within the first hub portion.

29. (previously presented) The automatic injector of claim 10 wherein the needle-receiving channel has a stop formed therein to limit the insertion depth of the needle within the first hub portion.